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A.D. 1846 . . . . . N<sup>o</sup> 11,074,

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S P E C I F I C A T I O N

OF

WILLIAM GARNETT TAYLOR

AND

WILLIAM TAYLOR.

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APPARATUS FOR PROMOTING THE CON-  
SUMPTION OF SMOKE, &c. IN FURNACES.

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L O N D O N :

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,  
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY :

PUBLISHED AT THE QUEEN'S PRINTING OFFICE, EAST HARDING STREET,  
NEAR FLEET STREET.

Price 9s.

1854.







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**Apparatus for Promoting the Consumption of  
Smoke, &c. in Furnaces.**

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W. G. & W. TAYLOR'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, WILLIAM GARNETT TAYLOR, of Halliwell, in the County of Lancaster, Cotton Spinner, and WILLIAM TAYLOR, of Halliwell aforesaid, Labourer, send greeting.

WHEREAS Her present most Excellent Majesty Queen Victoria, by Her  
5 Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Third day of February, in the Ninth year of Her reign, and in the year of our Lord One thousand eight hundred and forty-six, did, for Herself, Her heirs and successors, give and grant unto us, the said William Garnett Taylor and William Taylor, Her especial license, full power, sole  
10 privilege and authority, that we, the said William Garnett Taylor and William Taylor, our executors, administrators, and assigns, and such others as we, the said William Garnett Taylor and William Taylor, our executors, administrators, or assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein  
15 expressed, should and lawfully might make, use, exercise, and vend, within England and Wales, and the Town of Berwick upon Tweed, our Invention of "CERTAIN IMPROVEMENTS IN CONSUMING SMOKE AND ECONOMISING FUEL;" in which said Letters Patent is contained a proviso that we, the said William Garnett Taylor and William Taylor, shall cause a particular description of the nature  
20 of our said Invention, and in what manner the same is to be performed, to be inrolled in Her Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and large appear.



*W. G. & W. Taylor's Improvements in Consuming Smoke & Economising Fuel.*

**NOW KNOW YE**, that in compliance with the said proviso, we, the said William Garnett Taylor and William Taylor, do hereby declare that the nature of our Invention, and the manner in which the same is to be performed, is particularly described and ascertained in and by the Drawings hereto annexed, and the following explanation thereof, that is to say :—

Our Invention of improvements in consuming smoke and economising fuel may be applied to all furnaces constructed in the ordinary manner with open ash pits, and whether employed in connection with steam engine or other boilers, or used in any other situation wherein the consumption of smoke and consequent economy of fuel is desirable, and where steam or other power can be obtained for moving the exhausting and blowing apparatus herein-after described. This Invention has for its object a more perfect combustion of the inflammable gases and unconsumed particles of carbon, which, in the ordinary construction of furnaces pass up the chimney as smoke, and consists, firstly, in the application to the furnaces of an exhausting and blowing apparatus; and, secondly, in a peculiar distribution or arrangement of the smoke flues, so as to be adapted to the operation of such apparatus, the whole of which may be carried into practical effect as follows:—We employ as the exhausting and blowing apparatus a revolving fan or blower, so applied to or in the smoke flue that the smoke and other gaseous products evolved from the combustion of the fuel in the furnace shall be arrested or regained during its passage from the furnace to the chimney, and brought back through another flue leading from the fan or exhausting and blowing apparatus, and opening on to the “dead plate” or thereabouts, at or near the front of the fire bars or furnace, and causing the smoke to be passed over the fire, and between that and the boiler bottom; the sooty exhalation will thereby be consumed and prevented passing up the chimney to the atmosphere. And in order that the mode that we have found most practically useful of carrying our Invention into effect may be more readily explained and perfectly understood, we have attached to these Presents a Sheet of Drawings, representing it as applied to the furnaces of two common steam engine boilers, which we consider will be quite sufficient to enable any competent person to adapt it to other furnaces.

Figure 1 is a longitudinal section taken vertically through one of the boilers and furnaces. Figure 2 is a sectional plan or horizontal view of the furnaces and flues (the boilers being removed); and Figure 3 is a transverse section of the same. Similar letters of reference are marked upon corresponding parts in all the Figures, this arrangement being drawn on a scale of half an inch to the foot. *a, a*, is the foundation brickwork supporting the boilers *b, b*; *c, c*, are the “dead plates” of the furnace; and *d, d*, the fire bars; *e* and *e* × are



FIG. 1.

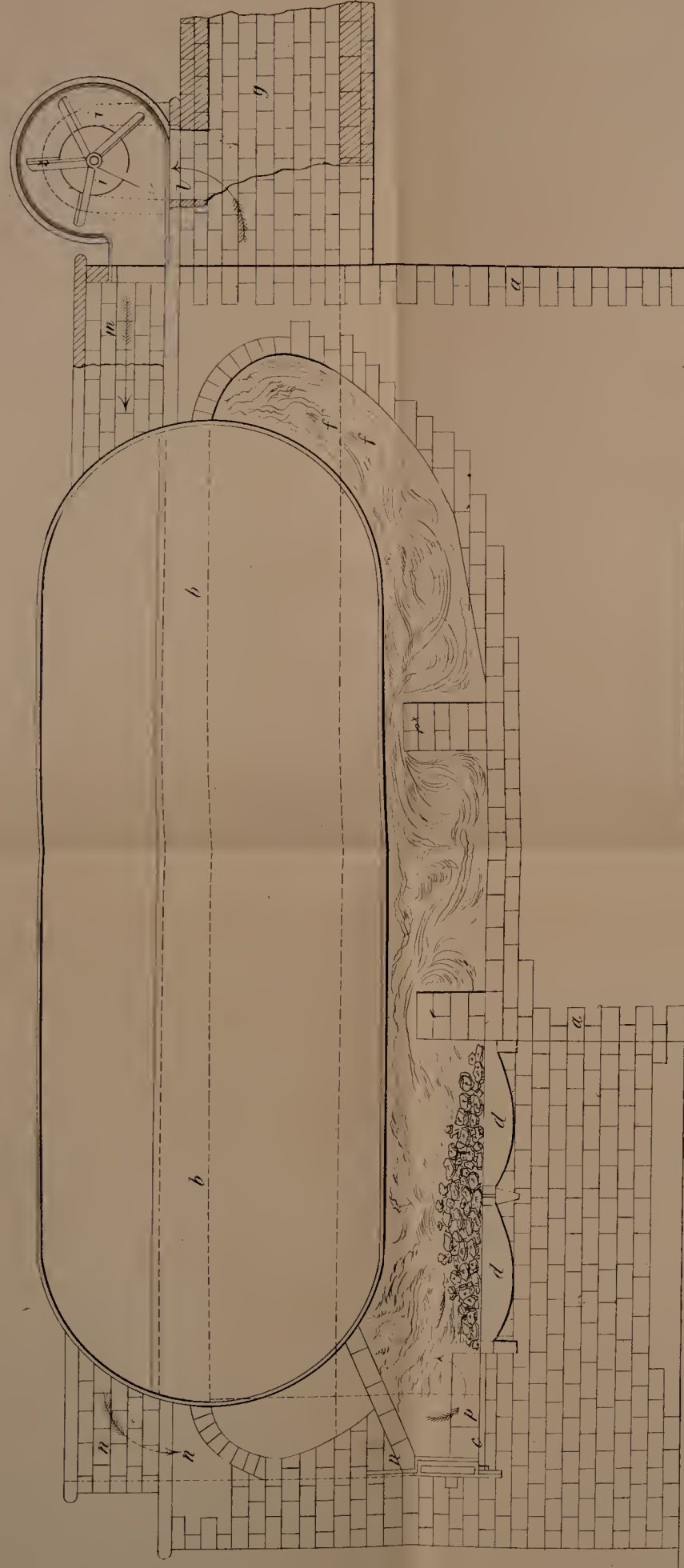


FIG. 2.

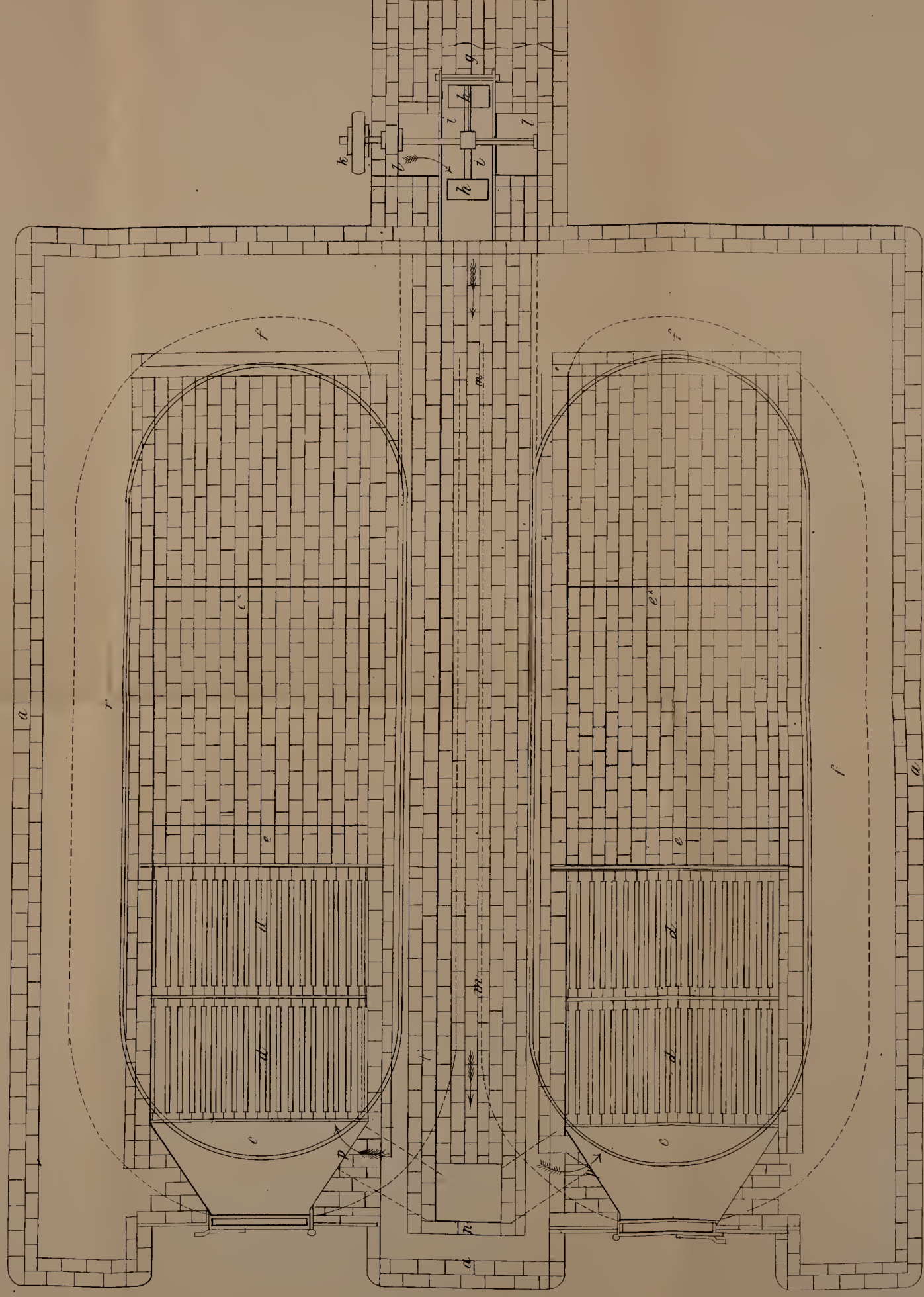
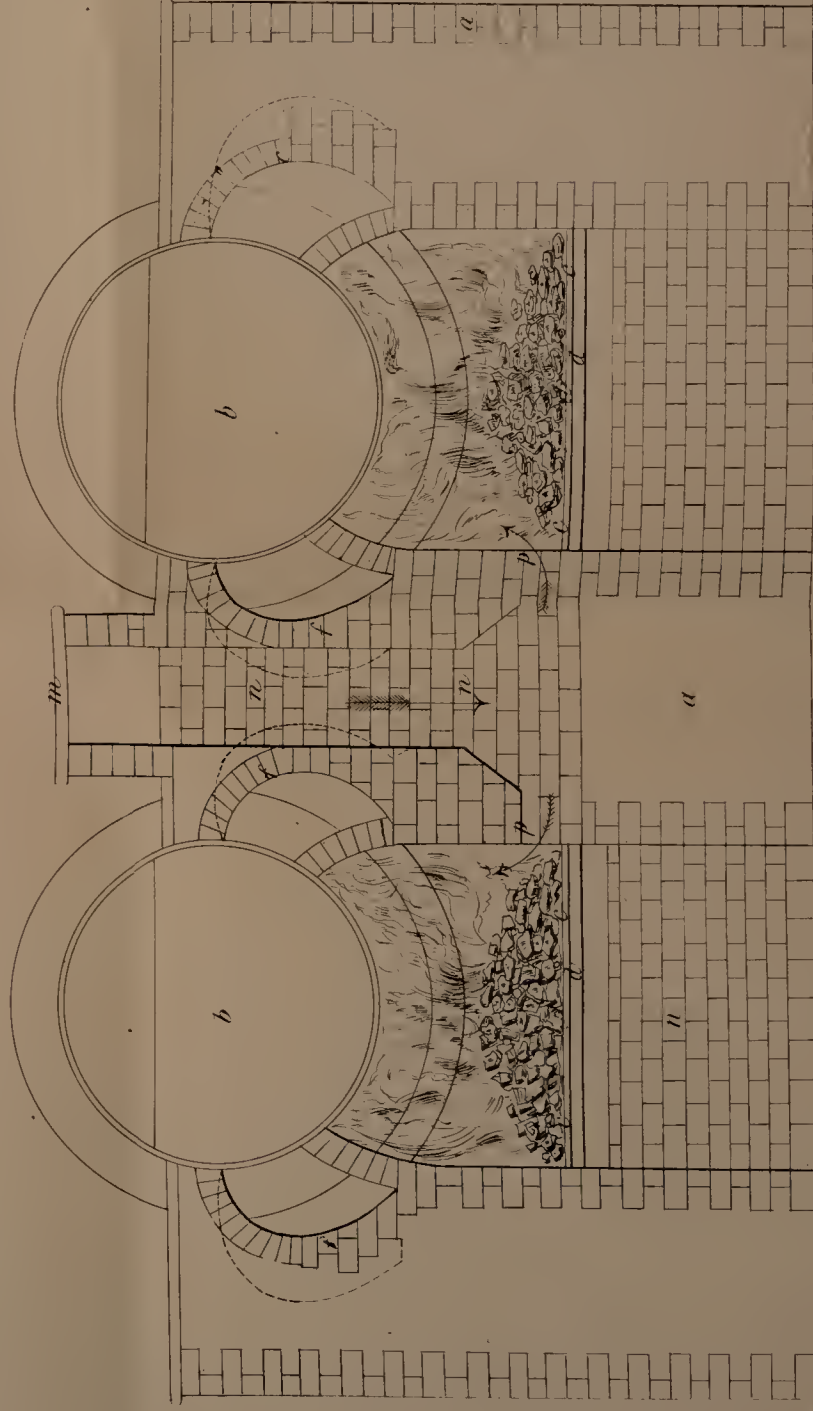


FIG. 3.







*W. G. & W. Taylor's Improvements in Consuming Smoke & Economising Fuel.*

two bridges, the first  $e$  about six inches, and the second  $e \times$  about four inches, from the bottom of the boiler (we would recommend two bridges, although they are not absolutely necessary in the application of our Invention);  $f, f$ , are the ordinary flues, joining ultimately in the flue  $g$ , which leads to the chimney;   
 5  $h$  is a fan (inclosed in a box  $i$ ,) which being caused to revolve by a band or strap passing around the pulley  $k$ , or by any other convenient means at a high velocity, say, seven hundred revolutions per minute, will have the effect of arresting the smoke and other vapours and gases in their progress to the chimney, and after drawing them through the flues  $l, l$ , to the centre of the fan,   
 10 drives them along the flue  $m$  to the vertical flue  $n$ . This flue  $n$  has at its lower end two thoroughfares  $p, p$ , one leading on to or near the "dead plate" of each furnace. Thus it will be seen the smoke and other gaseous vapours, instead of passing off directly to the chimney, are arrested and brought back by the action of the fan  $h$ , and by it kept in a state of constant circulation over   
 15 the fires until consumed. The engineer should keep the thoroughfares  $p, p$ , clear with a rake, and also upon introducing fresh fuel into the furnace should expose the live coal as much as possible, in order to facilitate the combustion of the smoke and gaseous vapours.

Having now described the nature and object of our Invention, and the   
 20 manner in which the same is to be performed, we desire it to be distinctly understood that we are aware that the idea of withdrawing the gases from the flues of furnaces, &c. by mechanical means, for the purpose of mixing them with atmospheric air, and of causing the mixture to be returned again through the furnace is not new, this having been proposed as an improvement in com-   
 25 bustion by various persons before the date of our said Letters Patent; and we wish it be understood that we do not claim as of our Invention the withdrawing gases from the flues of furnaces or returning them mixed with atmospheric air to the furnaces; nor do we claim as of our Invention the exclusive use of the mechanical apparatus and arrangements herein described   
 30 and referred to, except when the same are used for the purposes of our Invention; and we wish it further to be understood that such apparatus may be varied in different ways, which will be at once obvious to any competent mechanic, so as to be applicable for the purposes of our Invention; but we claim as our Invention the improvements in consuming smoke and econo-   
 35 mising fuel resulting from arresting the smoke in the flue prior to its ascending the chimney by means of a revolving fan or blower, or other convenient apparatus, and returning the smoke so arrested, by means of a suitable flue on to the "dead plate" or thereabouts, at or near the front of the fire bars or furnace, to be repassed over the fire, as above particularly set forth



W. G. & W. Taylor's Improvements in Consuming Smoke & Economising Fuel.

and described, without the introduction or admixture of fresh atmospheric air otherwise than by the common open ash pit in the usual manner.

In witness whereof, we, the said William Garnett Taylor and William Taylor, have hereunto set our hands and seals, this Thirty-first day of July, One thousand eight hundred and forty-six. 5

W<sup>M</sup> GARNETT (L.S.) TAYLOR.

WILLIAM (L.S.) TAYLOR.

AND BE IT REMEMBERED, that on the same Thirty-first day of July, in the year above mentioned, the aforesaid William Garnett Taylor and William Taylor came before our Lady the Queen in Her Chancery, and 10 acknowledged the Specification aforesaid, and all and everything therein contained, in form above written. And also the Specification aforesaid was stamped according to the tenor of the statute in that case made and provided.

Inrolled the First day of August, in the year above written.

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LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,  
Printers to the Queen's most Excellent Majesty. 1854.